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ABSTRACT

This study examined graduation and attrition patterns of undergraduates who were enrolled in the fall semester but who did not return for the spring semester at a doctoral granting, metropolitan university. A total of 504 of the 1,262 students who enrolled in the fall 1992 semester but who did not return for the spring 1993 semester completed a questionnaire on persistence and attrition. Of the 504 stopouts, 482 were tracked using institutional enrollment files through the fall 1997 semester. As of the fall 1997 semester, 166 of the 482 stopouts were enrolled or had graduated from the institution, while 316 had not returned. It was found that 50 percent of the variance in freshmen persistence and attrition behavior among the stopouts was explained using a regression model containing 13 independent variables. It was also found that 16, 6, and 5 independent variables predicted 70 percent, 32 percent, and 24 percent, respectively, of the variance in persisting and nonreturning behavior among sophomores, juniors, and seniors. Two appendixes provide a copy of the nonreturning students' survey form and survey item correlations. (Contains 20 references.) (MDM)

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Do Stop Outs Return?

A Longitudinal Study of Re-enrollment, Attrition and Graduation

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Dolores Vura
Editor
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Paper Title:

Do Stop Outs Return? A Longitudinal Study of Re-enrollment, Attrition and Graduation

Abstract

Higher education graduation rates are at the center of public scrutiny. And yet, attempts to explain and predict student attrition and persistence still confound most researchers (Tinto, 1993). In spring 1993, students who stopped out of a metropolitan, doctoral granting institution after the fall 1992 semester were surveyed. This study follows the 1992 cohort over time and uses institutional data (grade point average, class level etc.), 1993 survey responses (plans to complete a degree, reasons for not returning, hours worked while enrolled, etc.), and personal characteristics (age, gender, etc.) to determine the best predictors of re-enrollment, attrition and persistence to graduation.

I. Background and Literature Review

Higher education institutions remain an object of scrutiny for elected officials and the public in general. Graduation rates, which can be summarized succinctly and are easily compared, are often at the center of this scrutiny. And yet, researchers' efforts to identify clear patterns of student "drop out" or "stop out" behavior and explain retention and attrition rates have remained difficult. Until those factors influencing student departure are better understood, retention efforts are likely to be unsuccessful. Meanwhile, those in higher education will continue to be called upon to not only share, but to explain retention and attrition at their campuses.

In the last two decades, substantial research has been conducted on student persistence and withdrawal from institutions of higher education. Originally, student attrition theories (Spady, 1970) were based on a Durkheim's propositions underlying suicide, specifically, that persons with group affiliations were less likely to commit suicide or similarly in higher education, withdraw from college. Specifically, Tinto (1987) warned, "Incongruence and isolation are distinct roots of student departure (pp. 50)." Paramount then, to Tinto's Student Integration Model is student involvement in social and academic communities of the university as well as personal characteristics that suggest a good fit of the individual to the institution. Also necessary is the successful transition of the student to the college environment. Substantial research (Pascarella and Terenzini, 1979; Bean, 1980; Pascarella and Terenzini, 1983; Terenzini, Lorang, Pascarella, 1981) supports Tinto's causal model as useful in explaining student attrition or persistence behavior at residential institutions.

Bean's (1981, 1982) Student Attrition Model, developed from the basic tenants of employee turnover in work organizations, found that in addition to institutional and personal variables, external factors impact higher education persistence. Bean's causal model of student attrition, adds to the attrition discussion by emphasizing the impact of factors external to higher education institutions. External factors are important due to their effect on attitudes and decisions and ultimately, attrition. Researchers (Cabrera et. al.,1990 and 1992; Christie and Dinham, 1991) have confirmed the importance of external factors in understanding student attrition.

Cabrera et. al. (1992) found, that together Tinto's and Bean's models led to a more comprehensive understanding of student persistence. Discerning complimentary, rather than mutually exclusive models, provides promise for identifying and further operationalizing the multitude of forces that impact higher education persistence. The curious researcher will ask, "What factors internal and external to higher education, are likely to support students' abilities to persist to graduation or make it necessary to leave prior to goal attainment?" Thankfully, other researchers who have gone before have provided evidence of such factors. Essential to this query, however, is an awareness of the extent of changes amidst an ever changing student population and increasingly, a rapidly changing higher education environment.

Traditionally, much of the persistence and attrition research in higher education has focused on freshmen students at a limited number of institutions. Increasingly diverse student populations, particularly at metropolitan and urban campuses, including older students (Kemper, Kinnick, 1990), academically under-prepared students (Moore, Carpenter, 1985), and students who work full or part-time off campus (Astin, 1993) may impact persistence rates and confound researchers attempts to predict higher education enrollment patterns.

Christie and Dinham (1991) note that many students face simultaneous multiple demands of working, attending school and raising a family. Specifically, they concluded, "... our findings demonstrated the salience of external forces in students' daily lives" and supports Bean's findings regarding the importance of external experiences in attempts to explain persistence (pp. 433)." Tinto noted the additional problems adult learners

were likely to have making "contact" on campus and this may be especially true for female students. Women, who are often oriented more toward others - which in adolescence means parental attitudes, but later means family - find in subsequent education and work place experiences that higher education enrollment may be particularly affected by family (Adelman, 1991). Similarly, Berg and Ferber (1983) found, "In general, women were more likely to take account of the impact of going to graduate school on the significant people in their private lives (pp. 644)."

Nontraditional age students who face multiple demands on their energies often amidst increasing higher education costs may find it challenging to stay enrolled. Cabrera et. al. (1990) find that the ability to pay moderated the effects of other noneconomic variables thought to affect persistence. The authors concluded, " . . ability to pay is best understood as an external factor that directly affects decisions to persist, while it simultaneously moderates the effect of goal commitment and institutional commitment (pp. 329-330)." While Tinto's theory is silent about the ability to pay, ability to pay is an important variable, worthy of further study in persistence research.

Since students generally spend time doing what they value, Astin (1994) called examining how students' spent their time one of the most important aspects to study in the higher education environment (AAHE Assessment Forum, Summer 1994). Astin (1993) and Pace (1990), focus attention directly on students' behavior and quality of effort (e.g. hours spent in various activities). Hours spent studying is positively related to many academic outcomes, including retention (Astin, 1993). Hours spent working for pay, particularly when that work takes place off campus, is often incompatible with continuing their higher education enrollment. In general, students who work are more likely to drop out or take longer to complete their programs. However, these students are not likely to get lower grades and are likely to earn more money directly after graduation than those who did not work (Stern, Nakata, 199). Conversely, students who live on campus are much more involved in the use of campus recreational and cultural facilities and the student union. They are more involved in clubs and organizations, report more acquaintances and more gains in personal and social goals than students who live off campus (Pace, 1990).

It's unlikely that the higher education environment will change as fast as its student population. Nonetheless, Neumann et. al. (1990) called for changes in learning environments to improve learning flexibility and students' involvement in order to reduce emotional exhaustion, increase students' felt accomplishments and commitment to their institutions. Suggested learning activities to bring about such changes are more self directed learning, independent study, etc., and departmental forums, seminars and special events. Indeed research shows that when students and their needs are at odds with their higher education environment, students are likely to leave. Intent to leave (Bean, 1982) and a poor person-environment fit (Tinto, 1975) are related to drop out behavior. In fact, intent to leave among a series of other independent variables had the largest direct influence on dropout behavior (Bean, 1982). Bean revealed that both certainty about major and job had high positive correlations with intent to leave, particularly if the major were not offered at the current institution, because the student would need to transfer and if the occupation did not require a college degree, the student would leave higher education for the work place. Similarly, Pascarella, et. al. (1983) found a seeming nonsequitur between social integration and persistence. The finding, at a commuter institution, was inconsistent with prior research at residential institutions. The researchers (1983) concluded, that the " . . .the socially integrated student was more likely to transfer to a residential institution where the increase in opportunities for social involvement are more consistent with his or her personality orientations (pp. 97)."

While much research has been done to explore and contribute to our understanding of student attrition at higher education institutions, there is still much of the variance in student attrition and persistence behavior left to be explained (Bean, 1980; Brower, 1992;). "At this point in our inquiry, at least, there does not appear to be any easy or simple way of characterizing student departure from higher education or explaining its patterning among different students and institutions (Tinto, 1987, p. 33)."

II. Study Purpose

This paper, over five years, longitudinally examines graduation and attrition patterns of undergraduate students who were enrolled in the Fall 1992 semester, but who did not return for spring semester 1993 at a doctoral granting, metropolitan institution. In spring 1993, all undergraduate students who stopped out after the fall 1992 semester were surveyed. This 1992 stop out/not returning cohort was followed through fall semester 1997. This study uses institutional data (grade point average, class level, etc.), 1993 survey responses (plans to complete a degree, reasons for not returning, hours worked while enrolled, etc.), and personal characteristics (age, gender, etc.) to determine the best predictors of re-enrollment, attrition and persistence to graduation.

III. Institutional Context

This study is conducted at a single institution that currently enrolls approximately 24,000 students, equal proportions at the undergraduate and graduate/professional levels. While 20% of the undergraduate students live on campus, the remaining undergraduates commute and most of these commuters live at home with family or relatives. The university is the first enrollment choice among 70% of the transfers, but only the first choice of approximately 50% of the freshmen. Finally, eighty percent of the students who graduate never stop out prior to graduation.

IV. Survey Process and Response Rate

The retention and attrition literature was reviewed prior to questionnaire development. The authors, mindful of this literature, tailored the questionnaire to their audience (i.e., a mix of traditional and nontraditional students) and the institution at which the survey was conducted. Nontheless, the questionnaire covered the important constructs in the higher education persistence and attrition field. Specifically, Tinto's and Bean's constructs of academic and social integration, pre-entry characteristics and external factors were included in questionnaire development.

In March 1993, all undergraduate students who were enrolled during Fall semester 1992, but who had not returned for spring semester 1993 were surveyed (n=1,262). Two survey mailings and a follow-up postcard mailing resulted in a 43% response rate (n=504). Students' responded to the questionnaire by indicating the extent to which various reasons were a major, minor or not a reason for not returning to the institution for spring semester 1993. Other items asked for information on career goals, how students spent their time while enrolled (e.g. working), whether they had lived on campus, were a first generation college student, had dependent children and how far campus was from work and their "permanent" home." Further, a sequential, identifying number was placed on each survey that could be linked to the student's social security number and institutional data bases for the purpose of linking additional data to responses (i.e., age, sex, grade point average and class level). In all, 76 independent variables were used in this study. (A copy of the questionnaire is contained in Appendix A).

V. Primary Reasons for Stopping Out/Not Returning from Fall '92 to Spring '93

By fall 1994, nonreturning student responses had been analyzed and a report prepared. Information shared with the university community included students' primary reasons for not returning (see Table 1 below), the average number of reasons chosen by various demographic variables, etc. It became clear, that overtime, tracking these students' behaviors and their enrollment over time would yield the most useful information.

Table 1. Primary Reasons for Stopping Out/Not Returning from Fall '92 to Spring '93

Rank	Reason for Stopping Out	Importance Index*	(%) Choosing Each Reason**
1	Difficulty getting wanted/needed courses	.360	46
2	Conflict between work and school	.346	42
3	Courses offered on inconvenient days/times	.328	44
4	Unable to afford college now	.327	41
5	GMU was too expensive	.305	42
6	Need to make more money	.305	40
7	Cost/convenience of parking	.280	39
8	Difficult registration procedures or processes	.247	33
9	Family Obligations	.237	29
10	Inadequate academic advising	.231	31

*Importance index ranges from 1.0 to 0.0. Students indicated whether each reason was major/minor or not a reason in their decision to stop out. Major reason was assigned a value of 1.0, minor=.5 and not a reason=.0. The sum was divided by the number of people responding to that question. **Includes all those who selected it as either a major or minor reason for stopping out.

Students' reasons for not returning were further examined by sex, age, class level, credit hour enrollment, GPA, hours worked, dependent children and first generation college students. Conflict between work and school was ranked second overall and had an overall importance rating of .346. However, its importance rating was substantially higher among those enrolled in five or fewer credit hours (.507) and those with dependent children (.423). In January 1994, a summary of the survey results (Gentemann and Ahson, 1994) pointed to the multitude of reasons for not returning among a very diverse student population. Specifically, the authors concluded "At all class levels, a conflict between school and work responsibilities was selected as a primary reason for not returning. This conflict however steadily increased through the senior year with 53.4% of seniors indicating this was a reason for not returning."

In Table 2 below the substantial negative correlation between age and credit hour enrollment (-.657) and between hours worked per week and credit hours enrolled (-.357) further confirms the relationship between the rising age of adult students and less time available to attend classes and labs. And, as might be expected, between working and reduced credit hours.

Table 2. Correlation Matrix Comparing Five Study Characteristics
Spring 1993 Nonreturning Students

Correlation Matrix	Class Level	Age	GPA	Credit Hours	Hours Worked
Class Level	1.0	.572	.346	-.395	.244
Age		1.0	.433	-.657	.260
GPA			1.0	-.314	.056
Credit Hours				1.0	-.357
Hours Worked					1.0

Freshmen, conversely, were more likely to be dissatisfied with their grades, have plans to transfer, be undecided about their academic major and suspended for academic reasons when compared to those at other class levels. First generation college students were more likely than other nonreturners to indicate that a need to "make more money" was a reason for not returning. Eighteen percent of those who received an academic warning at the end of fall 1992, which would not result in any prohibition in registering, did not return for spring semester 1993.

Even with a multitude of significant and informative findings regarding Spring 1993 nonreturners, the authors wondered which students, over time, and which factors are particularly significant in students' decision to return and persist to graduation. Thus, began the current study.

VI. Re-enrollment, Persistence/Graduation or Nonreturning Behavior Over Time

The spring 1993 stop out cohort was tracked using institutional enrollment files from spring 1993 through fall semester 1997. Of the original 504 spring 1993 survey respondents, researchers accurately tracked 482. Specifically, re-enrollment and graduation for the cohort was checked every fall semester. Fall semester contains the largest number of students enrolling at the university and it is unlikely that a student, irregardless of class level at the institution, could persist to graduation without taking classes offered in a fall semester. Had an "intermittent" persister re-enrolled in only spring and summer semesters at the institution and managed to graduate, their successful persistence would have been documented via graduation files.

Graduators and persisters were combined into one study group. This decision was supported by previous research findings (see Ahson and Phelps, 1996) that revealed similar survey responses and characteristics for each group. Second, by the end of summer '97, the size of the persisters group was so small (n=40), that conducting valid statistical analyses on this group would have been difficult. The graduators/persisters group includes all undergraduate students at the university who were enrolled during fall semester 1992 and who stopped out of spring semester 1993 and had either graduated by Fall 1997 (two students, however, were documented as January 1998 graduates) or who re-enrolled/were persisting in Fall semester 1997. Of the 482 spring 1993 stop outs, 126 were graduators (n=126) and forty were persisters.

Table 3. Number and Proportion of Students in Each Study Group

Study Groups Fall '97 Status	Number	Percentage
1. Graduators/Persisters	166	34.4%
2. Nonreturners	316	65.6%
Total*	482	100.0%

** At the time of this study, 22 students could not be accounted for in the graduation files.*

The second study group was comprised of nonreturners, those students who stopped out after the fall 1992 semester, had not graduated by Fall, 1997 and who were not enrolled in any subsequent fall semester 1993 -1997. Of the 482 nonreturners who responded to the spring 1993 stop out survey, 316 were classified as nonreturners. (See Table 3.)

The Stop out Cohort, After Five Years - How Many Returned? How Many Graduate?

The largest proportion of persister/graduators (41%) returned (36.6%) or graduated (4.4%) in the first fall semester following the spring that they stopped out. After the first year, the cumulative proportion who persist and who graduate remains fairly constant from 34.2% to 34.9%.

Table 4. Number and Proportion of Spring 1993 Stop Outs (n=482)
Who Persisted or Graduated, Fall 1993 - Fall 1997*

Semester and Year	Stop out Cohort ***Not Enrolled*** ***(Nonreturners)***	Stop Out Cohort ***Enrolled*** ***(Persisters)***	Stop Out Cohort ***Graduated*** ***(Graduators)***	Cumulative Total of Cohort ***Enrolled & Graduated*** ***(Persisters & Graduators)***
Fall '93	**59.5%** **(n=287)**	36.6% (n=174)	4.4% (n=21)	**40.5%** **(n=195)**
Fall '94	**65.6%** **(n=316)**	24.5% (n=118)	10.0% (n=48)	**34.4%** **(n=166)**
Fall '95	**65.1%** **(n=314)**	18.9% (n=91)	16.0% (n=77)	**34.9%** **(n=168)**
Fall '96	**65.8%** **(n=317)**	12.2% (n=59)	22.0% (n=106)	**34.2%** **(n=165)**
Fall '97	**66.0%** **(n=316)**	8.3% (n=40)	26.1% (n=126)*	**34.4%** **(n=166)**
STUDY TOTALS (n=482)	**Nonreturners (n=316) Group 2: 66%**			**Persister/Graduators (n=166) Group 1: 34%**

*(*Includes two January 1998 graduates who were members of the original stop out cohort.*

VII. Analytical Methodology Used To Predict Persistence/Graduation or Not returning

A stepwise multiple regression was conducted using 76 independent variables and the dichotomous dependent variable defined as group. The dependent variable "group" were persisters/graduators (group=1) after five years from the original time of stopping out and nonreturners (group =2). For all respondents, for whom survey data were complete (n=351), fifteen independent variables were included in the best prediction model. Twenty-five percent of the variance in persisting/graduating and nonreturning behavior was explained. In the regression model, class level (e.g. freshmen, sophomore, junior or senior) was the best single predictor (r^2 =.0799, $p \leq .0001$) of behavior, so further stepwise regression analyses were conducted by class level. As is evident in Table 5, persistence/graduation rises linearly with class level.

Table 5.
Proportion and Number of Persistence/Graduators and Nonreturners by Class Level
Status as of Fall, 1997

	Persisters/Graduators	**Nonreturners**	**Total**
Freshmen	19% (n=22)	81% (n=94)	n=116
Sophomores	28% (n=30)	72% (n=78)	n=108
Juniors	36% (n=49)	64% (n=86)	n=135
Seniors	55% (n=63)	45% (n=52)	n=115

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VIII. Explaining Persistence/Graduation or Nonreturning by Class Level

A. Predicting Freshmen Persistence/Graduation and Attrition

Stepwise multiple regression was conducted for freshmen respondents. Fifty percent of the variance (model r^2=.5034) in freshmen persistence and attrition behavior was explained using a thirteen independent variable regression model. Second, a discriminant function analysis, with prior probabilities set at .50 were conducted using only the independent variables in the freshmen multiple regression model. The analysis correctly classified 90% of freshmen persisters and 93% of freshmen nonreturners.

Tinto's theories were supported with respect to evidence of pre-entry characteristics, academic and social integration constructs and college goals. Specifically, age and first generation college student status were important. *Having transferred or plans to transfer* (r^2=.086) and *planning to major in an academic area not offered by the institution* (r^2=.1087) were representative of, or a lack thereof, of academic integration. *Hours spent socializing with friends* and *racism or prejudice* were aspects of social integration. Academic goals such as the *desire to finish college* and *not interested in college at this time* were significant. Our findings are similarly supportive of the role of external factors in student persistence and attrition. Specifically, *conflict between job and school*, *dependent children*, *hours spent interacting with or caring for family*, and *health problems*. These external forces further included issues of convenience or access to the institution with both *inconvenient access to METRO* and the *cost/convenience of parking*.

Table 6. Freshmen Stepwise Regression Model (r^2=.503)

Variable Entered	Partial In R**2	Model R**2	F	Prob>F
Q1-Transferred/Plans to transfer	0.0857	0.0857	8.8161	0.0038
Q51A-Desire to finish college	0.1087	0.1945	12.5500	0.0006
Q30-Inconvenient access to METRO	0.0596	0.2541	7.3560	0.0080
Q14-Conflict between job/schl respon	0.0384	0.2924	4.9324	0.0288
Q62F-Hours socializing w/ friends	0.0325	0.3250	4.3378	0.0401
Q62J-Interaction w/care for family	0.0271	0.3521	3.7283	0.0567
Q47-Experienced racism/prejudice	0.0176	0.3989	2.5459	0.1142
Q45-Health problem	0.0187	0.4176	2.7643	0.1000
Q55-First generation college student	0.0246	0.4423	3.7548	0.0560
Q56-Dependent children	0.0263	0.4548	4.0990	0.0460
Q9-Major in an area not offered	0.0193	0.4741	3.0876	0.0825
Q31-Cost/convenience of parking	0.0157	0.4898	2.5504	0.1141
Q5-Not interested in college at this time	0.0136	0.5034	2.2474	0.1377

B. Predicting Sophomore Persistence/Graduation and Attrition

A sixteen independent variable regression model was used to predict 70% (model r^2=.6975) of the variance in persisting/graduating and nonreturning behavior among sophomores. Frankly, why our survey was so exceptional in predicting sophomore behavior is unknown, but it does appear to be a critical time in the lives of students relative to issues of academic and social integration. In fact, of the 16 predictor variables, seven

were related to issues of academic integration and five were related to social integration. *Inadequate study areas*, *dissatisfaction with the library*, *wanting smaller classes*, *difficult registration procedures/processes* and *difficulty getting wanted and need courses* were independent variables employed in the model. Social issues included *wanting more organized social activities*, *hours spent socializing with friends*, *whether they had ever lived on campus*, *hours spent in student clubs and organizations* and *dissatisfaction with recreational facilities* were all predictive. External factors were also important for sophomores including *dependent children*, the *geographic area of the university being too expensive*, *hours spent commuting* and the *number of miles campus was from home* were predictive of retention/persistence or not returning. A correlation matrix including responses from all class levels was conducted on all survey items and revealed that the *No. VA area being too expensive* correlated significantly ($p \leq .001$) with a *decrease of loss in financial aid* (.363). Further, *having dependent children* correlated (.546) with *hours spent interacting with/caring for family*. No pre-entry attributes were found to be significant predictors for sophomores. However, sophomores' responses to their *likelihood of returning to the institution* were significant institutional commitment predictors.

The discriminant function analysis for sophomores (prior probabilities set at .50) correctly classified 100% of sophomore nonreturners and persisters/graduators into their respective groups and further supports the predictive value of the independent variables in the regression model.

Table 7. Sophomore Stepwise Regression Model (r^2=.6975)

Variable Entered	Partial R**2	Model R**2	F	Prob>F
Q39-Inadequate study areas	0.0755	0.1524	6.6810	0.0117
Q56-Dependent children	0.0441	0.1965	4.0652	0.0474
Q62D-Hours spent commuting	0.0537	0.3020	5.5377	0.0213
Q62F-Hours socializing with friends	0.0608	0.3628	6.7757	0.0112
Q61-Ever lived on campus?	0.0466	0.4094	5.5210	0.0216
Q54-Likely to return to campus?	0.0427	0.4521	5.3764	0.0234
Q36-Not satisfied with library facil.	0.0282	0.4961	3.8038	0.0553
Q22-Wanted smaller classes	0.0320	0.5281	4.5458	0.0367
Q37-Not satisfied w/ recreational facil.	0.0219	0.5501	3.2177	0.0774
Q57-# of miles from campus to home	0.0257	0.5633	3.8903	0.0528
Q62A-Hours in classes/labs	0.0178	0.6162	2.9685	0.0897
Q33-Diff. registration proced./processes	0.0172	0.6334	2.9515	0.0907
Q35-Diff. getting wanted/needed courses	0.0163	0.6497	2.8770	0.0949
Q19-Northern VA was too expensive	0.0188	0.6685	3.4568	0.0678
Q62G-Hours in student organizations/clubs	0.0156	0.6840	2.9582	0.0906
Q62C-Hours on study/homework	0.0168	0.6975	3.3393	0.0726

C. Predicting Junior Persistence/Graduation and Attrition

While no pre-entry attributes were predictive of persistence/graduating or nonreturning among sophomores; *age* and *gender* were significant predictors for juniors. The discriminant classification procedure accurately placed 84% of junior persisters/graduators into group, but only 59% of junior nonreturners were accurately placed. For juniors, the *likelihood of returning*, representative of institutional commitment, was predictive as were *campus not being close enough to work* and if a student *didn't feel like they fit in, (i.e, no*

friends). Cumulative *grade point average (GPA)* at the time of stopping out was also predictive. In all, 6 independent variables were used to explain 32% of the variance in junior behavior.

Table 8. Junior Stepwise Regression Model (r^2=.3237)

Step	Variable Entered	Removed	Number In	Partial R**2	Model R**2	F	Prob>F
1	GPA*		1	0.0637	0.0637	6.3921	0.0131
2	AGE*		2	0.0724	0.1360	7.7892	0.0064
3	Q54-Likelihood of returning?		3	0.0792	0.2153	9.2880	0.0030
4	Q12-Campus not close to work		4	0.0273	0.2426	3.2835	0.0733
5	Q46-Didn't feel like I fit in (i.e, no friends)		5	0.0521	0.2947	6.6469	0.0116
6	GENDER*		6	0.0291	0.3237	3.8258	0.0536

*Calculated/determined from institutional data base. GPA and AGE were end of fall 1992 figures; GPA was cumulative.

D. Predicting Senior Persistence/Graduation and Attrition

Similar to sophomores, no pre-entry attributes (i.e., age, sex, etc.) were predictive of persisting/graduating or nonreturning behavior among seniors. Instead, *how students spent their time in student clubs and organizations* and *hours working for pay were predictive*. Academic integration factors such as *wanting smaller classes* and *reported difficulty getting wanted/need courses* were predictive as were seniors' *purposeful or planned career goals*. Less than one-quarter of the variance in student behavior, however, was explained by the five independent variable model (model r^2=.2424). The discriminant analysis , however, revealed that 90% of the senior nonreturners were placed correctly into their group, but only 53% of the persisters/graduators - just 3% above chance, were accurately placed.

Table 9. Senior Stepwise Regression Model (r^2=.2424)

Step	Variable Entered	Removed	Number In	Partial R**2	Model R**2	F	Prob>F
1	Q62G-Hours in student clubs/organizations		1	0.0596	0.0596	5.0033	0.0281
2	Q51C-Purposeful/planned career goals		2	0.0573	0.1169	5.0627	0.0273
3	Q35-Diff. getting wanted/needed courses		3	0.0453	0.1621	4.1596	0.0448
4	Q22-Wanted smaller classes		4	0.0460	0.2081	4.4137	0.0390
5	Q62B-Hours working for pay		5	0.0343	0.2424	3.3937	0.0694

IX. Study limitations

An important pre-entry attribute, race, was not included in this study. The survey item, *experienced racism or prejudice* was a significant predictor variable for freshmen, therefore, race probably warranted inclusion. However, previous studies at our campus have revealed great variability across and within ethnic groups and their graduation and attrition rates. Therefore, it would be important to study each ethnic group (i.e, not just white or nonwhite as is often done in these studies). Unfortunately, the small number of individuals in

the various ethnic groups represented in this study did not allow for such analyses. It should also be noted that prejudice could apply not only to race, but to sexual orientation or foreign status. Instances of backlash against the gay, lesbian, and bisexual students have occurred in recent years on campus, for example.

While we are confident that the five year longitudinal study is a substantial and relatively valid time frame for discerning who is likely or unlikely to persist/graduate or not return, it is possible that some students could have consistently been classified as nonreturners (since enrollments files were checked each fall semester) and yet, could be persisting in the spring and working their way toward graduation. Of course, had they graduated in the five year time frame, their graduation and thereby, persistence would have placed them in the appropriate group for this study.

This study stopped analysis at stepwise regression and discriminant classification. Further analysis indicating the strength and association of the independent variables with the dichotomous dependent variable (i.e., persisting/graduating or not returning) including a path analysis might yield additional, useful information.

The institution enrolls a substantial proportion of transfer students, in fact, approximately 60% of any given graduating class is comprised of transfer students. Transfers arrive predominantly from community colleges within the local area or the state, but were not examined in this study due to small sample sizes, particularly when data were examined within class level. A follow-up study including predictive models for freshmen and transfer students might be warranted.

Finally, 57% of stop outs did not respond the original stop out survey. We do not know if they transferred, re-enrolled or became permanent drop outs.

X. Summary

The stop out survey given to students who did not return for spring semester 1993 best predicts persistence/graduation for freshmen and sophomores. In this study, 50% of variance in freshmen (r^2=.50) behavior was explained in a 13 variable regression model. Further, the model correctly placed 90% and 93%, respectively of freshmen persisters/graduators and nonreturners. Sorting variables between pre-entry (i.e., age, sex, etc.) attributes, academic integration, social integration, academic goals/institutional commitment, and external forces shows the factors to be important at each class level with the exception of pre-entry variables for sophomores and juniors (see Table 10 at the end of the summary). Freshmen, compared to other class levels, were most likely to indicate external forces as reasons for their not returning to campus for spring semester 1993. For example, of the 13 variables predictive of freshmen persistence/graduation or attrition, six were related to external forces including job conflicts, children, health issues, and transportation difficulties. No doubt, students who enter higher education with these concerns are likely to be challenged daily in their attempts to attend class, much less, persist to graduation.

The sophomore stepwise regression model included the largest number of independent variables (i.e, 16) and had the highest prediction (70%) of persistence/graduation of all class levels. For sophomores, academic and social integration factors are predominant. Further, the discriminant analysis placed all sophomores (100%) into the appropriate persister/graduator or nonreturner group. In fact, 12 independent variables were related to issues of academic and social integration factors. No pre-entry attributes were included in the multiple regression model, but external factors such as hours spent commuting, *number of miles*

from campus to home, *having children*, and considering the *geographic area too expensive* (which correlated as a survey variable with a *loss/decrease in financial aid*) were predictor variables.

The number of variables used to explain junior (six) and senior (five independent variables) behavior were substantially fewer than for freshmen or sophomores. The extent of prediction was also substantially lower for juniors (r^2=.323) and seniors (r^2=.242). Pre-entry attributes were important for juniors, but not for seniors. Further, 84% of the junior persisters/graduators and 59% of the junior nonreturners were accurately placed into group by the discriminant function analysis. Conversely, for seniors the discriminant analysis was fairly accurate at predicting senior nonreturners (90%), but barely sufficient for predicting senior persister/graduator classification (53%).

Table 10. Summary of Persistence Constructs and Independent Variables by Class Level

	Freshmen r^2=.503 (13 indep. variable model)	**Sophomores r^2=.698 (16 indep. variable model)**	**Junior r^2=.324 (6 indep. variable model)**	**Senior r^2=.242 (5 indep. variable model)**
Pre-entry Attributes	First generation college student	none	Gender Age	none
Academic Integration	Transfer/Plans to Transfer Major in area not offered @ univ.	Inadequate study areas Not sat. w/ library facilities Wanted smaller classes Hrs in classes/labs per week Hrs spent on study/homework Diff. registration procedures/processes Diff. getting wanted/needed courses	GPA	Wanted smaller classes Diff. getting wanted / needed courses
Social Integration	Hrs socializing w/friends Experienced racism/prejudice	Wanted more organized social activities Hrs spent socializing with friends Ever lived on campus Not satisfied with recreation facilities Hrs spent in student clubs/organizations	Didn't feel like I fit in, no friends	Hours in student clubs or organizations
Academic Goals	Desire to finish college Not interested in college now	Likelihood of returning to campus	Likelihood of returning to campus	Purposeful or planned career goals
External Forces	Conflict between job & school Dependent children Hrs interacting w/caring for family Health problems Inconvenient access to METRO Cost/convenience of parking	Dependent children Northern VA was too expensive Hours spent commuting # of miles from campus to home	Distance of campus to work	Hours spent working for pay

In the large public university in which this study took place, where most students are commuters, we can state with confidence that as class level increases, so does persistence/graduation. Seniors are more likely to re-enroll and persist to graduation after a semester stop out (55%) than are freshmen (19%). This phenomenon has both a common sense explanation as well as a more complicated one involving the many facets of Tinto's model.

On the one hand, this study confirms that the findings of other researchers regarding "traditional" freshmen persistence applies to freshmen at a commuter campus as well. Pre-entry attributes, academic integration, social integration, academic goals and external forces are all important elements of the model predicting freshmen persistence/graduation. The constructs in this model, however, are weighted toward external forces, making this a more important factor for our freshmen students than those described in earlier studies. Indeed, at all class levels, external forces play a key role for our students as they decide whether to continue at our institution.

For our sophomores, academic and social integration appear to be even more important constructs than for freshmen and it is highly probable that sophomores who leave our institution are looking for a more traditional college experience than they have found with us.

The regression models for juniors and seniors are not as robust in predicting their behavior. However, with the exception of pre-entry attributes for seniors, where one might expect that, because of maturation, there is less of an influence on behavior, both junior and senior behavior appears to be somewhat influenced by the constructs identified by Tinto and others. Yet, clearly the freshmen residential model of persistence is less applicable to upperclassmen.

External factors (Bean, 1980 and 1982) in particular, may be a far more important construct for students at a non-residential campus. Indeed, in this study, external factors comprise a construct that is played out across class levels. And while the importance of the other domains in Tinto's model hold for freshmen and sophomores, external factors may be more significant than any other phenomenon effecting enrollment decisions for the students who select a non-residential institution.

The answer to the question, "Do stop outs return?" is yes, they do, but they are far more likely to do so as they progress through class levels and if they are able to reconcile or compensate for externals forces that conflict with their enrollment.

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Appendices

APPENDIX A

SURVEY OF NONRETURNING STUDENTS

We expect some reasons are more important than others in your decision not to enroll for the spring 1993 semester at GMU. Help us understand your reasons by circling the number that indicates whether each reason was a "major, minor or not a reason" in your decision. For all other survey items circle or write in the appropriate response.

Major Reason	*Minor Reason*	*Not A Reason*	
			**** ACADEMIC REASONS**
3	2	1	*1.* have transferred or plan to transfer
3	2	1	*2.* was suspended for academic reasons
3	2	1	*3.* not satisfied with grades
3	2	1	*4.* undecided about academic major
3	2	1	*5.* not interested in college at this time
3	2	1	*6.* quality of faculty
3	2	1	*7.* accessibility of faculty
3	2	1	*8.* could not get into desired program
3	2	1	*9.* wanted to major in an area not offered
3	2	1	*10.* was admitted to the college/university that I really wanted to attend
			**** WORK AND FINANCIAL REASONS**
3	2	1	*11.* job promotion or accepted new job
3	2	1	*12.* GMU is not close enough to work
3	2	1	*13.* did not receive adequate financial aid
3	2	1	*14.* conflict between job and school responsibilities
3	2	1	*15.* need to make more money
3	2	1	*16.* would rather work than go to school
3	2	1	*17.* unable to afford college at this time
3	2	1	*18.* GMU was too expensive (e.g. tuition)
3	2	1	*19.* living in Northern VA was too expensive
3	2	1	*20.* decrease in or loss of financial aid
			**** GMU's CHARACTERISTICS**
3	2	1	*21.* size of GMU (i.e, too large)
3	2	1	*22.* size of classes (wanted smaller classes)
3	2	1	*23.* location in Washington metro area
3	2	1	*24.* too far from my "permanent" home
3	2	1	*25.* too close to my "permanent" home
3	2	1	*26.* wanted a more traditional college experience
3	2	1	*27.* wanted more organized social activities
3	2	1	*28.* did not feel safe on or around campus
3	2	1	*29.* not satisfied with campus housing
3	2	1	*30.* inconvenient access to METRO
3	2	1	*31.* cost/convenience of parking
			**** GMU's POLICIES OR FACILITIES**
3	2	1	*32.* inadequate academic advising
3	2	1	*33.* difficult registration procedures/processes
3	2	1	*34.* courses were offered on or at inconvenient days and times
3	2	1	*35.* difficult getting wanted/needed courses
3	2	1	*36.* not satisfied with library facilities
3	2	1	*37.* not satisfied with recreational facilities
3	2	1	*38.* dissatisfied with classroom facilities
3	2	1	*39.* inadequate study areas
3	2	1	*40.* inadequate computing facilities

Major Reason	*Minor Reason*	*Not A Reason*	
			**** PERSONAL REASONS**
3	2	1	*41.* moved or plan to move out of area
3	2	1	*42.* family obligations
3	2	1	*43.* English language skills were inadequate
3	2	1	*44.* transportation difficulties
3	2	1	*45.* health problems
3	2	1	*46.* didn't feel like I fit in, no friends
3	2	1	*47.* experienced racism, prejudice, or sexism
3	2	1	*48.* too much stress
			**** OTHER REASONS**
3	2	1	*49.* please explain: _____ _____

50. Of all your reasons for leaving GMU, rank (in order of importance) the top three reasons by placing the number (10, 23, etc.) of the item on the appropriate line below.

Reason(s) #1: _____ #2: _____ #3: _____

51. How would you rate yourself *(higher, lower, about the same)* on the following items when compared to other GMU students.

Higher Than	*About the Same*	*Lower Than*	*—> Compared to other GMU students*
3	2	1	a. desire to finish college
3	2	1	b. academic self confidence
3	2	1	c. purposeful or planned career goals
3	2	1	d. access to finances to pay for college
3	2	1	e. need or desire for social interaction
3	2	1	f. amount of responsibility for family

52. Briefly, why did you choose to enroll at GMU rather than some other higher education institution?

_____

_____

53. Do you plan to complete a degree program at some time?

1. Yes —> 54. Are you likely to return to GMU? 1. Yes 2. No
2. No

55. Are you the first member of your immediate family to attend college?

1. Yes
2. No

56. Do you have dependent children?

1. Yes Number of children: ____
2. No

57. How far is your home from GMU? # of Miles: ____

58. How far is your work from GMU? # of Miles: ____

☐ I am not employed

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59. Was there any one experience or event that was critical in your decision not to enroll for the spring 1993 semester?

1. No
2. Yes If yes, please explain. _____

60. Where did you get the money to pay for college and living expenses this past fall? Indicate approximately what percentage of your total expenses came from each of the following sources. The total from all sources must equal 100%.

%

_____ 1. personal savings
_____ 2. income from employment
_____ 3. money from parents, family, spouse
_____ 4. loans (you do have to pay back)
_____ 5. scholarship(s), grants (you do not have to pay back)
_____ 6. employer contributions or payment
_____ 7. other: _____

100 percent total

61. Did you ever live on campus for any of the semesters for which you were enrolled at GMU?

1. Yes
2. No

62. While attending GMU, how much time did you spend during a typical week doing the following activities? *(Check the appropriate box for each statement.)*

Number of Hours Per Week

Activities	None	< 1 hr	1-2	3-4	5-10	11-15	16-20	21-25	26-30	30+
classes/labs										
working for pay										
studying/homework										
commuting										
volunteer work										
socializing with friends										
clubs/groups										
watching T.V.										
exercising/sports										
interaction w/- care for family										

63. Only students who have transferred or plan to transfer to another institution should answer the next question.

☐ I am already attending or have been accepted by: (please identify) _____

☐ I plan to transfer to: _____

If you would like information regarding reenrollment at GMU, call (703) 993-2440.

To return this survey, fold into thirds on the line with the address showing and staple or tape closed. No postage is needed.

THANK YOU!

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Fairfax, Va 22030-4444

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Appendix B

Nonreturning Student Survey Item Correlations
(r^2 of .3 or higher & sign.at p≤.0001 shown)

Q1(Transfer/Plans to Transfer) r^2
- Q21(size of college/too large) .316
- Q26(Wanted more trad. college exper.) .470
- Q27(Wanted more organ. social actvts) .312
- Q54(Are you likely to return?) .600

Q3(Not satisfied with grades)
- Q2(Was suspended for acad. reasons) .463
- Q6(Quality of faculty) .323

Q5(Not interested in college at this time)
- Q51A(Hours* spent in classes/labs) -.329

Q6(Quality of faculty)
- Q21(Size of college/too large) .318
- Q22(Size of classes/wanted smaller) .460
- Q31(Cost/convenience of parking) .353
- Q32(Inadequate academic advising) .454
- Q33(Diff. registration proced./process) .396
- Q35(Diff. getting wanted/needed courses) .335
- Q38(Dissatisfied w/ classroom facilts) .420
- Q39(Inadequate study areas) .310
- Q54(Are you likely to return?) .328

Q7(Accessibility of faculty)
- Q21(Size of GMU/too large) .330
- Q22(Size of classes/wanted smaller) .542
- Q31(Cost/convenience of parking) .428
- Q32(Inadequate academic advising) .530
- Q33(Diff. registration proced./procss) .404
- Q35(Diff. getting wanted/needed courses .385
- Q38(Dissatf'd with classroom facilts .451
- Q39(Inadequate study areas) .393
- Q40(Inadequate computing facilities) .350

Q10(Admitt'd to univ.really wanted to attend.)
- Q1(Transferred/Plan to Transfer) .480
- Q25(Too close to my "permanent" home) .319
- Q26(Wanted more tradtn'l college exper .444
- Q27(Wanted more organzd social actvts .350
- Q54(Are you likely to return?) .322

Q11(Job promotion or accepted new job
- Q14(Conflict bet. job/school respnsblts .399
- Q15(Need to make more money) .355

Q13(Did not receive adequate financial aid)
- Q15(Need to make more money) .338
- Q18(XX was too expensive- tuition) .502
- Q17(Can'tafford college at this time) .478
- Q20(Decrease/loss in financial aid) .545

Q14(Conflict between job & school responsblts)
- Q15(Need to make more money) .363
- Q34(Courses offered inconven.days/time .310
- Q62b(Hours spent on study/homework) .312

Q15(Need to make more money) r^2
- Q16(Would rather work than go to schl) .301
- Q17(Can't afford college at this time) .575
- Q18(XX was too expensive- tuition) .434
- Q19(Living in No. VA too expensive) .340

Q16(Would rather work than go to school)
- Q51A(Desire to finish college) -.363

Q17(Unable to afford college at this time)
- Q18(XX was too expensive-e.g.tuition) .676
- Q19(Living in No. VA too expensive) .332
- Q20(Decrease/loss in financial aid) .350

Q18([This college] was too expensive)
- Q19(Living in No. Va too expensive) .369
- Q20(Decrease/loss in financial aid) .333
- Q31(Cost/convenience of parking) .348

Q19(Living in No. VA was too expensive)
- Q20(Decrease/loss in financial aid) .363

Q21(Size of college - i.e. too large)
- Q26(Wanted more tradtn'l college exper) .333
- Q28(Did not feel safe on/around campus) .322
- Q33(Diff. registration proced./process) .333

Q22(Size of classes- wanted smaller classes)
- Q33(Diff. registration proced/process) .409
- Q35(Diff. getting wanted/need courses) .334
- Q36(Not satisfied with library facits) .303
- Q38(Dissatisfied with classroom facits) .352
- Q40(Inadequate computing facilities) .350

Q24([College] was too far from permanent home)
- Q44(Transportation difficulties) .464

Q25(Too close to my permanent home)
- Q26(Wanted more traditn'l college exper.) .422

Q26(Wanted more traditional college experience)
- Q27(Wanted more organz'd social actvts) .655
- Q32(Inadequate academic advising) .329
- Q33(Diff. registration proced/processes) .317

Q27(Wanted more organized social activities)
- Q32(Inadequate academic advising) .326
- Q46(Didn't feel like I fit in/no friends) .302

Q28(Did not feel safe on or around campus)
- Q30(Inconvenient access to METRO) .315
- Q32(Inadequate academic advising) .361
- Q39(Inadequate study areas) .308
- Q46(Didn't feel like I fit in/no friends) .307
- Q47(Exper. racism, prejudice, or sexism) .436

Q29(Not satisfied with campus housing)
- Q61(Ever live on campus, any semester?) -.357

Q30(Inconvenient access to METRO)
- Q39(Inadequate study areas) .342
- Q44(Transportation difficulties) .301

Q31(Cost/convenience of parking)
- Q32(Inadequate academic advising) .398
- Q33(Diff. registration proced/processes) .466
- Q34(Courses at inconvenient days/times) .385
- Q35(Diff. getting want/needed courses) .400
- Q40(Inadequate computing facilities) .307

Q32(Inadequate academic advising)
- Q33(Diff. registration proced/process) .593
- Q35(Diff. getting want/needed courses) .470
- Q36(Not satisf'd w/ library facilities) .327
- Q38(Dissatisfied w/classroom facilts) .404
- Q39(Inadequate study areas) .362
- Q40(Inadequate computing facilities) .359

Q33(Diff. registration procedures/processes)
- Q34(Coures offered inconven.days/times) .407
- Q35(Diff. getting want/needed courses) .564
- Q36(Not satisfied with library facil) .325
- Q38(Dissatisfied with classroom facits) .326
- Q40(Inadequate computing facilities) .301

Q34(Courses offered at inconvenient days/times)
- Q62b(Hours working for pay) .301

Q35(Diff. getting wanted/needed courses)
- Q38(Dissatisfied with classroom facits) .333

Q36(Not satisfied with library facilities)
- Q37(Not satisfied w/ rec.facilts) .406
- Q38(Dissatisfied w/ classroom facilts) .310
- Q39(Inadequate study areas) .520
- Q40(Inadequate computing facilities) .318

Q37(Not satisfied with recreational facilities)
- Q39(Inadequate study areas) .322

Q38(Dissatisfied with classroom facilities)
- Q39(Inadequate study areas) .441
- Q40(Inadequate computing facilities) .350

Q39(Inadequate study areas)
- Q40(Inadequate computing facilities) .513

Q42(Family obligations)
- Q51f(Amnt of responsibility for family) .457
- Q56(Do you have dependent children?) -.470
- Q62j(Hrs interacting w/care for family) .393

Q51a(Desire to finish college)
- Q51c(Purposeful/planned career goals) .423

Q51b(Academic self confidence)
- Q51c(Purposeful/planned career goals) .428

Q51e(Need or desire for social interaction)
- Q61f(Live on campus, any semester?) .305
- Q62j(Hrs interacting w/care for family) -.302

Q51f(Amount of responsibility for family)
- Q62j(Hrs interactign w/care for family) .424

Q56(Do you have dependent children?)
- Q62j(Hrs interacting w/care for family) -.546

Q61(Did you ever live on campus, any semester?)
- Q62f(Hours socializing with friends) -.356

Q62a(Hours in classes/labs)
- Q62c(Hours spent on study/homework) .386

Q62f(Hours socializing with friends)
- Q62j(Hrs interacting w/care for family) -.546
- Q62i(Hours exercise/sports) .347

*Average hours per week, during a typical week.

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